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A spectral, quasi-3D, multi-GPU Particle-In-Cell code for plasma accelerators

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Modelling the complex dynamics in plasma accelerators requires computationally demanding Particle-In-Cell codes. These codes self-consistently solve the electromagnetic particle interaction inside the plasma. We present the latest features of FBPIC - a highly efficient, multi-GPU Particle-In-Cell code. It features a quasi-3D geometry that greatly reduces the computational costs, a spectral electromagnetic solver that eliminates numerical instabilities common to traditional field solvers and the Lorentz-boosted frame technique that allows to scale down the required simulation time by orders of magnitude.

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